UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/560,324	12/09/2005	Kawai P. Pang	62886A	4969

35503 7590 12/10/2008

Union Carbide Chemicals and
Plastics Technology Corporation
P.O. Box 1967
Midland, MI 48641-1967

EXAMINER	
KOLLIAS, ALEXANDER C	
ART UNIT	PAPER NUMBER
1796	

MAIL DATE	DELIVERY MODE
12/10/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/560,324	PANG ET AL.	
	Examiner	Art Unit	
	ALEXANDER C. KOLLIAS	1796	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,3,5,10,14,18,20,26 and 31* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,3,5,10,14,18,20,26 and 31* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Specification

1. The use of the trademarks ELVAX CM4987Wm ELVAX 240, and ARQUAD has been noted in this application. They should be capitalized wherever they appear and be accompanied by the generic terminology.

Although the use of trademarks is permissible in patent applications, the proprietary nature of the marks should be respected and every effort made to prevent their use in any manner which might adversely affect their validity as trademarks.

Claim Objections

2. Claims 14, 18, 26, and 31 are objected to because of the following informalities: claim 31 recites "the comonomer" which appears to be a typographical error of "the copolymer". Appropriate correction is required.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.

4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

5. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

6. Claims 1, 3, 5, 10, 14, 18, 20, 26, and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wei-Kuo et al (EP 1,052,654) in view of Carrus et al (US 2003/0008158).

Regarding claims 1, 3, 5, 10, 14, 18, 20, 26, and 31, Wei-Kuo et al disclose a polymer composition comprising a copolymer of vinyl acetate, ethylene and acrylic or methacrylic acid esters, as well as carbon black (Page 2 [0007], Page 3, [0013], and Page 5 [0024]). Regarding the claim limitations drawn to cross-linking, the reference that the resin is can be cross-linked by the addition of organic peroxides such a t-butyl and lauroyl peroxides are added in amount from 0.15 to 0.8 pats by weight per 100 parts by weight of the polymeric resin (Page 5, [0027]). The disclosed cross-linking agents meet the claim limitations recited in **claim 20.** The reference discloses amounts of copolymer (100 parts) additives such as carbon black (1 to 35 parts by weight), organic peroxides (0.15 to 0.8 parts by weight) (Page 5 [0023]-[0027]). Additionally, the reference discloses that additives and fillers are added in the amount from 01 to 50 wt % based on the weight of the composition (Page 5, [0030]). The reference discloses a method of

producing an insulation shield comprising ethylene copolymer and carbon black ((Page 6, [0032]).

It is noted that although the reference discloses nitrile based rubber which are added to the power cable coating composition, the nitrile based compounds are disclosed as being optional (Page 5, [0025]). As the reference discloses that nitrile based rubber is optional, the limitation recited in **claims 18, 26 and 31** drawn to a composition comprising less than 5 wt % nitrile-butadiene rubber is met.

The reference teaches all the claim limitations as set forth above. However, Wei-Kuo does not disclose that the resin composition comprises nano-particles contacted with a swelling agent.

Carrus et al discloses a composition comprising ethylene copolymers carbon black and inorganic material (Page 2, [0031] and Page 4, [0068]). The reference discloses that the inorganic materials comprises compounds such as montmorillonite, hectorite, etc (Page 3, [0034] and [0036]-[0041]). The inorganic material is modified by a compatibilizer such as quaternary ammonium or phosphonium salts (Page 3, [0034] and [0036]-[0041]). The disclosed quaternary salts disclosed by the reference meet the limitations recited in **claim 3**. The reference discloses that the combination of medium polarity polymers and inorganic material lamellar material which comprising a compatibilizer yield improved properties of the cable (Page 1, [0008]-[0009]). The reference discloses that the inorganic is added to the composition from 1 to 40 parts per hundred of the resin (Page 4, [0055]-[0056]).

The amounts of copolymer, carbon black, and inorganic material disclosed by the references are determined to be:

a. 87.6 wt % - 41.5wt % ethylene copolymer;

b. 11.4 wt % to 41.5 wt % carbon black;

c. 0.4 to 11.8 wt % inorganic material.

Regarding the amount of polymer in the composition, the only deficiency of modified Wei-Kuo is that the reference discloses the use of 87.6 wt % to 41.5 wt % EVA copolymer, while the present claims require 15 to 40 wt %.

It is apparent, however, that the instantly claimed amount of copolymer and that taught by the reference are so close to each other that the fact pattern is similar to the one in In re Woodruff , 919 F.2d 1575, USPQ2d 1934 (Fed. Cir. 1990) or Titanium Metals Corp. of America v. Banner, 778 F.2d 775, 227 USPQ 773 (Fed.Cir. 1985) where despite a "slight" difference in the ranges the court held that such a difference did not "render the claims patentable" or, alternatively, that "a prima facie case of obviousness exists where the claimed ranges and prior art ranges do not overlap but are close enough so that one skilled in the art would have expected them to have the same properties".

In light of the case law cited above and given that there is only a "slight" difference between the amount of copolymer disclosed by the reference and the amount disclosed in the present claims and further given the fact that no criticality is disclosed in the present invention with respect to the amount of copolymer, it therefore would have been obvious to one of ordinary skill in the art that the amount of copolymer disclosed in the present claims is but an obvious variant of the amounts disclosed in the reference, and thereby one of ordinary skill in the art would have arrived at the claimed invention.

Alternatively, based on the amounts of additives and fillers from 0.1 to 50 wt % of the composition disclosed by Wei-Kuo, the amounts of copolymer, carbon black, and inorganic material are determined to be:

a. 43.8 wt % to 20.75 wt % EVA copolymer;

b. 5.7 wt % to 20.75 wt % carbon black;

c. 0.2 wt % to 5.9 wt % inorganic material,

meeting the limitations recited in **claims 5, 14, 18, 26, and 31.**

Regarding the limitation recited in **claim 31**, drawn to a copolymer comprising less tan 28 wt % vinyl acetate, it is noted that Wei-Kuo discloses that monomers other than vinyl acetate. Furthermore, Carrus discloses ethylene copolymer compositions comprising ethylene vinyl acetate copolymers having a vinyl acetate content between 18 5 and 80 wt %, meeting the claim limitation recited in **claim 31**.

Given that both Wei-Kuo et al and Carrus et al are drawn to compositions for coating cables comprising EVA copolymers, and filler such as carbon black, and, given that Wei-Kuo et al does not explicitly prohibit other ingredients, in light of the particular advantages provided by the use and control of clays nano-particles treated with quaternary ammonium phosphates as taught by Carrus et al, it would therefore have been obvious to one of ordinary skill in the art to include such nano-particles in the composition and method of making shielding compositions disclosed by Wei-Kuo with a reasonable expectation of success.

Regarding the material properties recited in **claims 1, 5, 10, 14, 26, and 31** modified Wei-Kuo does not explicitly disclose that when cross-linked the polymeric resin is effective to

provide an insulation shield for power cable which a strip force of greater than 3 pounds per half inch at 23 degrees Celsius after being stored at 100 degrees Celsius for 2 weeks and an initial strip force of not greater than 24 pounds per half inch at 23 degrees Celsius. However, these limitations are expected to be present in modified Wei-Kuo because the polymeric resin composition disclosed in modified Wei-Kuo is identical in composition to the polymeric resin composition claimed in the instant application. "Where the claimed and prior art products are identical or substantially identical in structure or composition, or are produced by identical or substantially identical processes, a prima facie case of either anticipation or obviousness has been established." In re Best, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977).

Regarding the claim limitations recited in **claims 10, 14, and 26**, drawn to a powder cable comprising an electrical conductor, an insulation layer which surrounds the electric conductor and an insulation shield layer which surrounds and is contiguous with the insulation layer, Wei-Kuo discloses that the composition comprising ethylene copolymer, and carbon black surround an electric conductor (Page 6, [0036]).

However, the reference does not explicitly disclose an insulator layer that surround thee electrical conductor and is further surrounded by an insulation shield layer.

Carrus et al discloses an insulation composition for a transmission cable. The insulation of shielding layers surrounds an insulating layer and an electric conductor (Page 5, [0079] and Figure 1).

Given that both Wei-Kuo and Carrus et al are drawn to shielding compositions for cable containing ethylene copolymers and carbon black,, it would therefore have been obvious to one

of ordinary skill in the art to modify the cables as disclosed by Wei-Kuo to include an electrical insulator found between the shielding and conduction layers as taught by Carrus et al as doing as doing so would amount to nothing more than use of known composition for its intended use, in a known environment to accomplish entirely expected results.

Conclusion

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to ALEXANDER C. KOLLIAS whose telephone number is (571)-270-3869. The examiner can normally be reached on Monday-Friday, 8:00 AM -5:00 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vasu Jagannathan can be reached on (571)-272-1119. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/A. C. K./
Examiner, Art Unit 1796

/Vasu Jagannathan/
Supervisory Patent Examiner, Art Unit 1796